

## **Executive Summary**

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**In support of Mobile Telecommunication Technologies' (Mtel) request for spectrum to operate a Nationwide Wireless Network (NWN), market research was undertaken which included:**

- 1. Sizing of the NWN market among both individual business buyers (individual employees or workers) and centralized corporate buyers (e.g., MIS or Communications Managers)**
- 2. Assessing service requirements in terms of message length for buying segments**
- 3. Assessing the relative attractiveness of NWN offerings on a local, a regional, and on a nationwide base**
- 4. Examining the relationships between NWN and acknowledgement paging**

**Two sets of statistically projectable surveys were undertaken to address these questions:**

- 1. A survey of 800 individual buyers**
- 2. A survey of 401 corporate decisionmakers**

### **The results suggest the following:**

- 1. The markets for NWN and for acknowledgement messaging are quite sizeable in both the near-term (five years) and after ten years of service**
- 2. Individual buyers will dominate demand for NWN offerings – this is probably due, in part, to systems integration requirements in larger firms**
- 3. Marketing and distribution efforts should be focused first on developing the market for NWN among individual buyers**
- 4. Findings from both individual surveys and corporate surveys support the notion that users require relatively short messages**
- 5. Corporate buyers anticipate shorter messages, but greater message traffic than individual buyers**
- 6. Analysis of buyer preference for nationwide, regional and local NWN offerings suggests substantial preference for nationwide offerings – this preference is found among both individual and corporate buyers, but is more pronounced in the corporate sector**

## **Background**

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**In November 1991, Mobile Telecommunication Technologies (Mtel) filed a request with the Federal Communications Commission (FCC) for spectrum to operate a Nationwide Wireless Network (NWN)**

- NWN will provide users with two-way messaging capability using small terminals, laptop/palmtop PCs or electronic personal organizers
- The underlying platform can provide capabilities for relatively long messages (including fax and E-mail) offered by NWN as well as brief acknowledgement type messages (as in acknowledgement paging)
- Modest spectrum allocation was requested
- NWN offerings provide nationwide service coverage in which “messages find the users”

## **Objectives**

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**A program of market research was undertaken to develop a quantitative picture of the market among both individual and corporate buyers – the objectives of this work included:**

- 1. Sizing of the NWN market among both individual business buyers (individual employees or workers) and centralized corporate buyers (e.g., MIS or Communications Managers)**
- 2. Assessing service requirements in terms of message length for buying segments**
- 3. Assessing the relative attractiveness of NWN offerings on a local, a regional, and on a nationwide base**
- 4. Examining the relationships between NWN and acknowledgement paging**

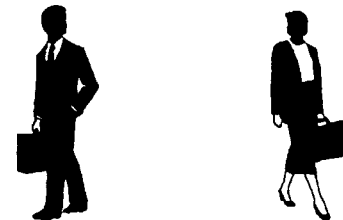
**Two sets of quantitative telephone surveys were used in market assessment activities:**

**Quantitative Telephone Surveys  
Among Corporate Buyers**



- A representative sample of 401 headquarters of firms sampled nationwide
- Respondent was involved in centralized purchasing
- Minimum number of employees was 100 per firm
- Sample was stratified on the basis of the number of employees
  - 20% had more than 1,000 employees
  - 30% had between 250 and 999 employees
  - 50% had 249 or less employees

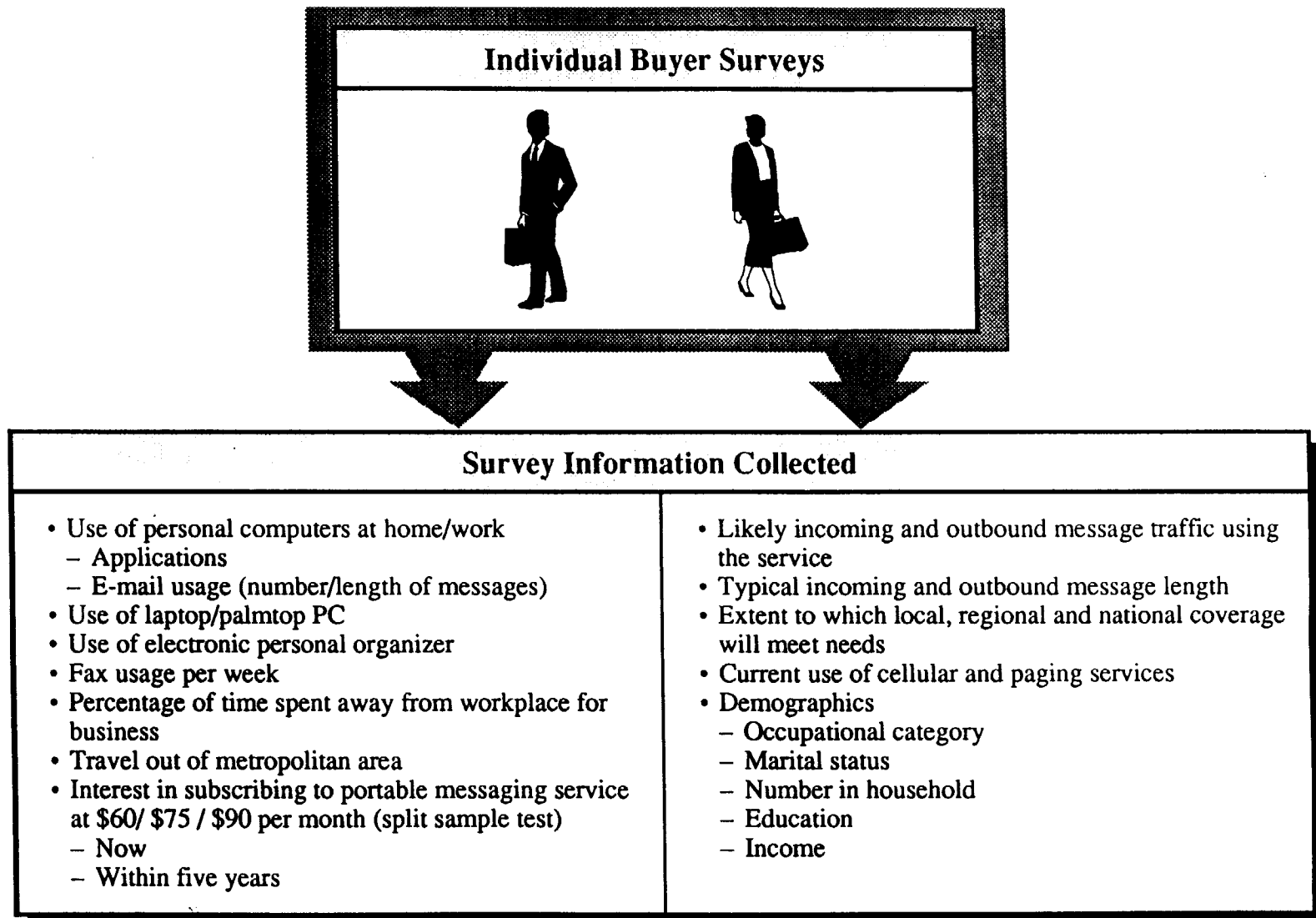
**Quantitative Telephone Surveys  
Among Individual Buyers**



- 800 households were randomly sampled nationwide
- Respondent was an adult who was queried about business use of NWN and acknowledgement messaging
- Random digit dialing was used to ensure statistically accurate sample coverage
- Sample was stratified on the basis of income
- Results were statistically weighted to provide projectable picture of results

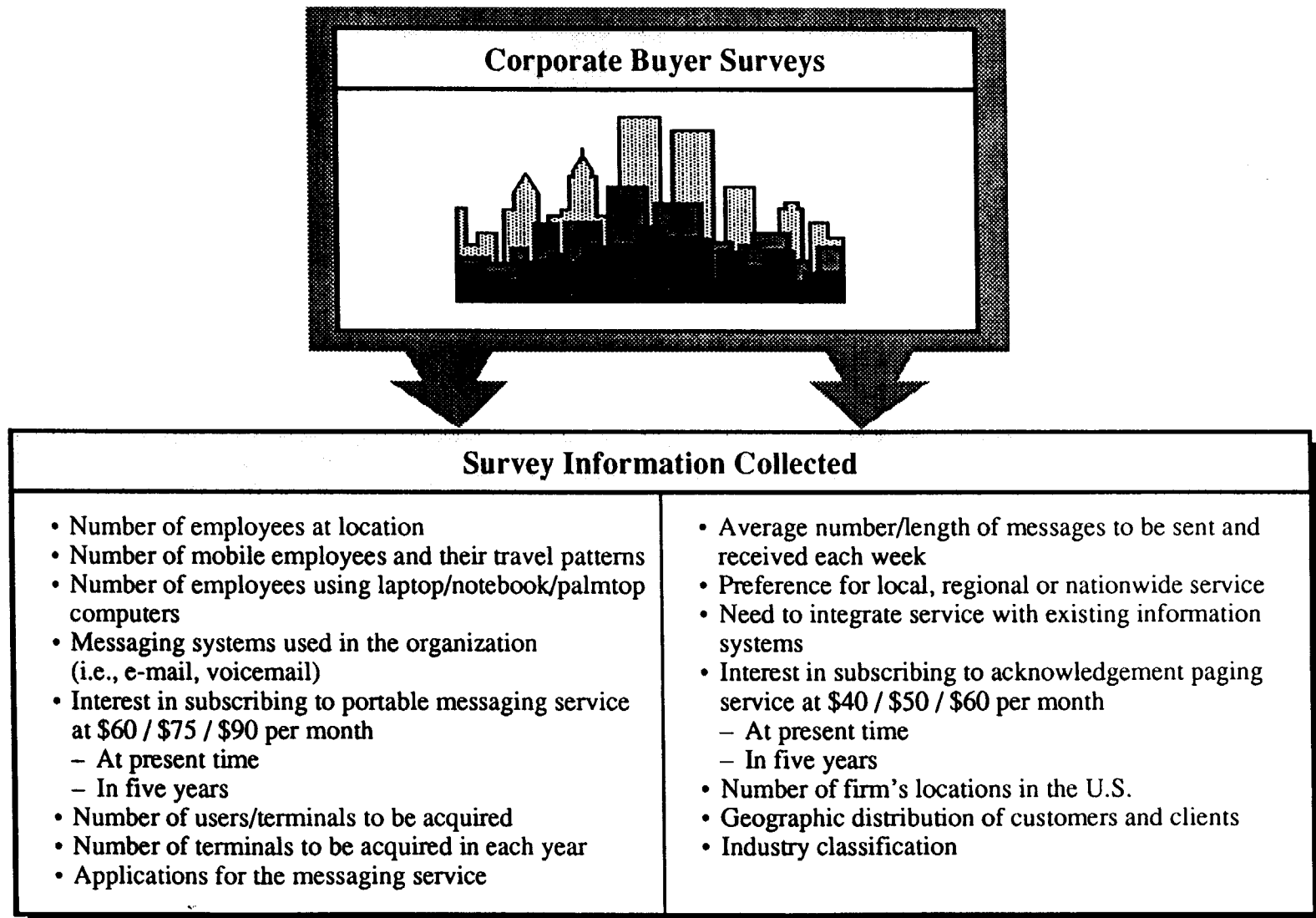
## Approach Information Collected in Individual Buyer Surveys

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## Approach Information Collected in Corporate Buyer Surveys

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## **Overview of Findings**

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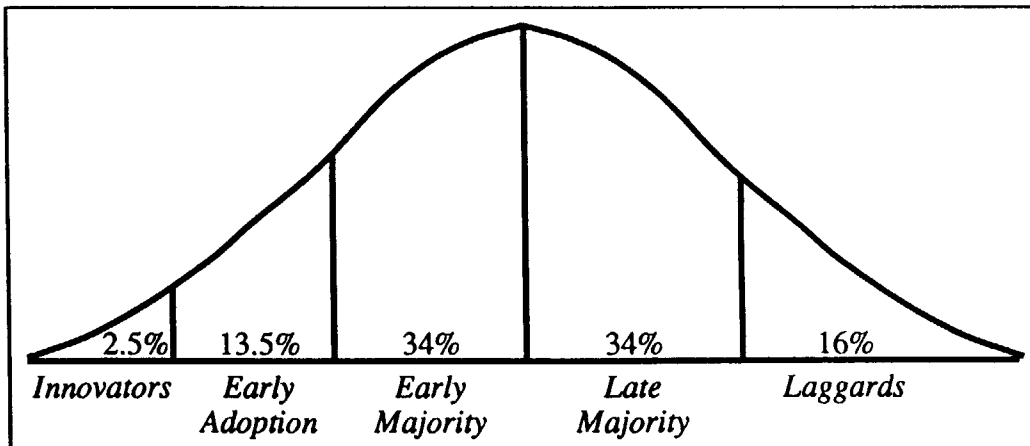
**Household survey findings are representative of the population of the U.S. workforce – the centralized corporate buying survey is representative of all firms with 100 or more employees (29,000 firms and nearly 40 million employees) – these surveys reflect:**

- 1. Demand for NWN Offerings**
- 2. Message Traffic and Message Length Requirements**
- 3. Preference for Nationwide Coverage**
- 4. Relationship of NWN to Acknowledgement Messaging**



**To forecast demand for NWN, we used an adoption model developed by Frank Bass to predict purchase of new products**

- The model was rooted in early literature on diffusion of innovation in agricultural settings
- The underlying principle is that the adoption curve follows a consistent path which varies as a function of time
- Models have successfully been applied to a variety of consumer and industrial products
  - CB radios
  - Cellular telephones
  - Electric refrigerators
  - Air conditioners
  - Color TV sets



**Surveys of individual buyers assumed that no more than one NWN subscription would be acquired in each household surveyed (this is a conservative assumption because only one worker per household was assumed to adopt the service)**

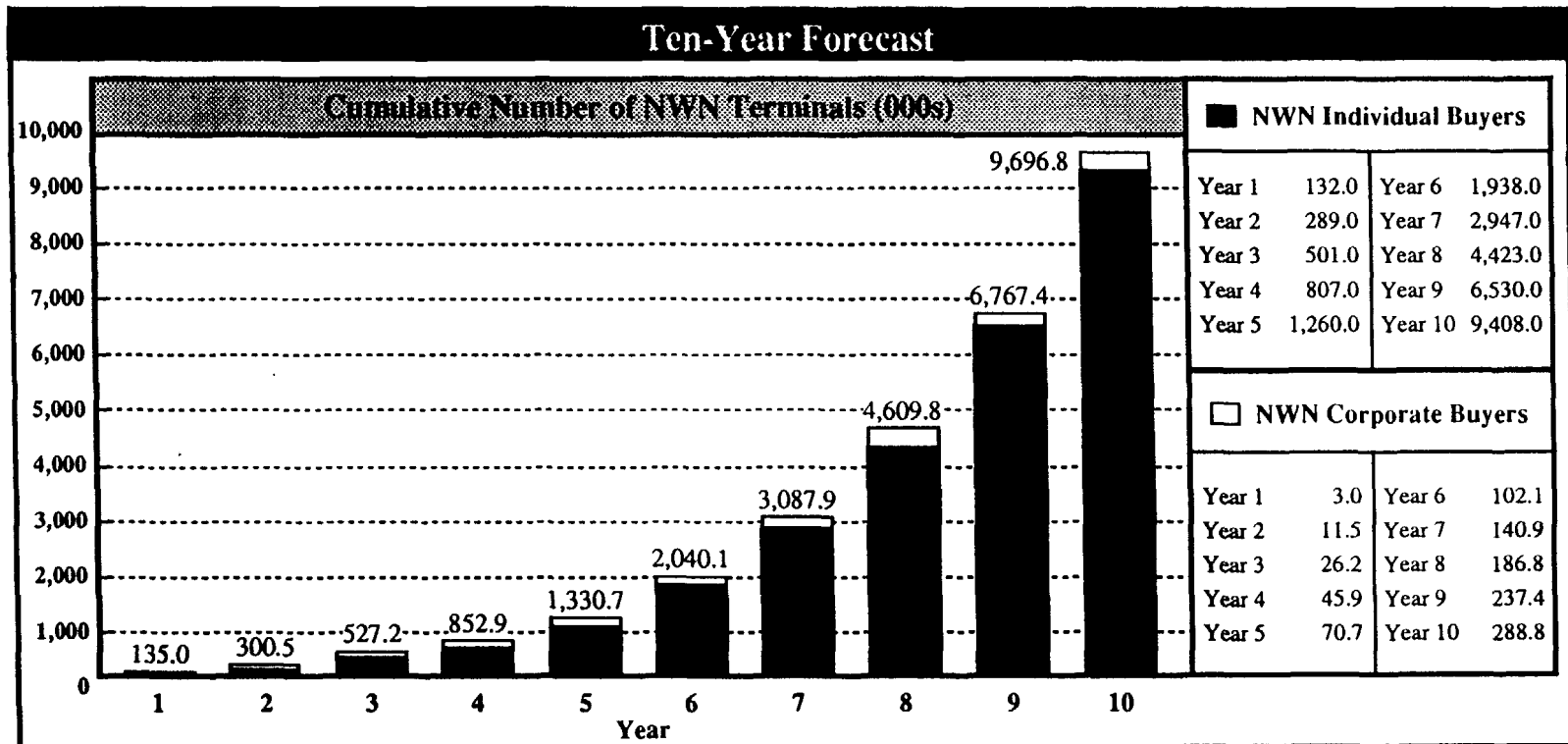
**The pricing of NWN service was an average of \$75 per month plus equipment costs\***

**Centralized corporate decisionmakers will acquire multiple units (they evidenced an average of 30 subscriptions per firm) over a multi-year period**

\* Survey did not assume that individuals would pay for the service in its entirety – like cellular, it may be assumed that individuals expect to pay part and have their business pay part of the bill

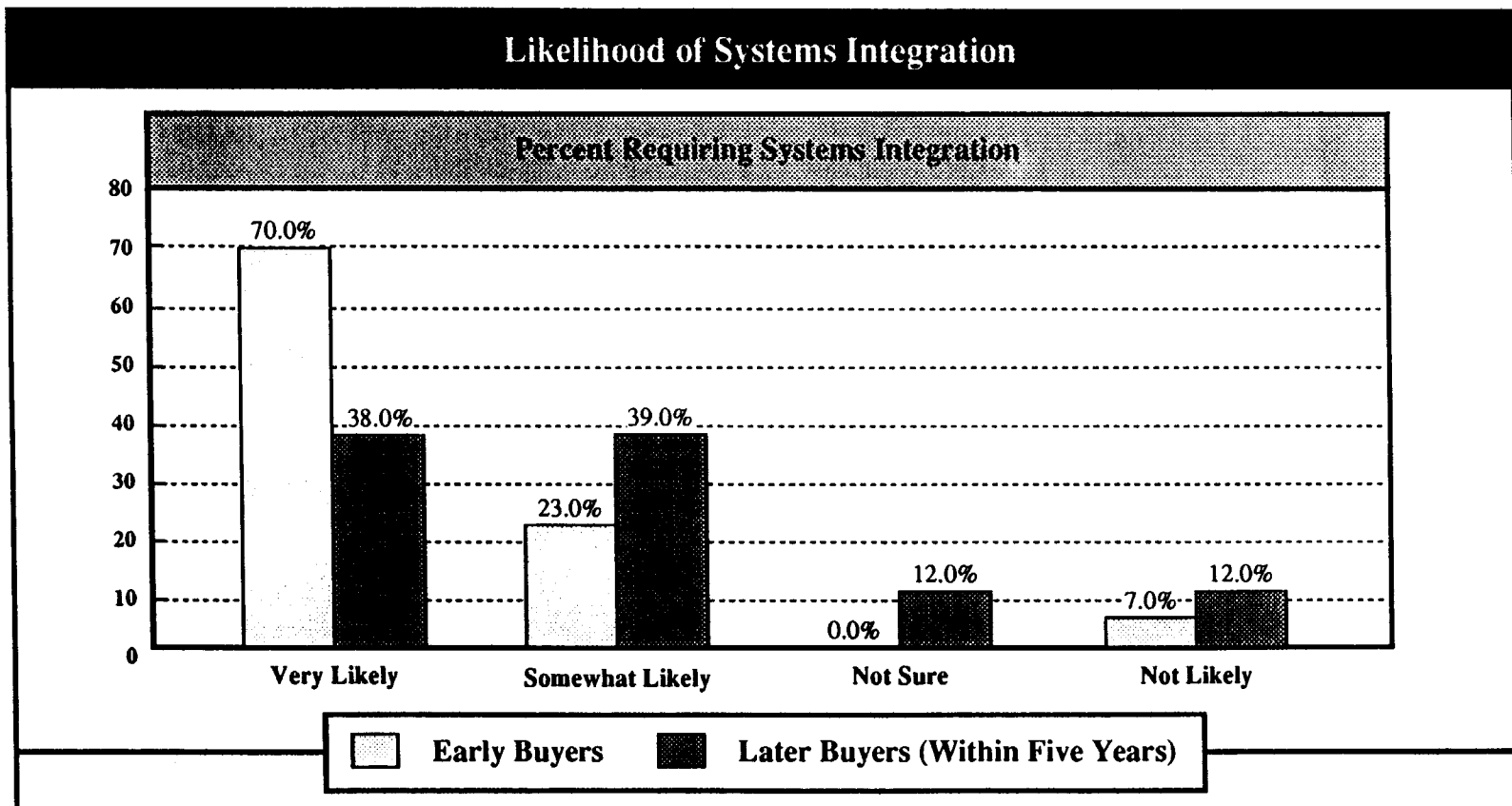
## Demand for NWN Offerings Demand for NWN Subscriptions

**We estimate that NWN subscriptions will be adopted by over 1.3 million users in the first five years and nearly ten million after ten years of service (assuming 300 market rollout)**



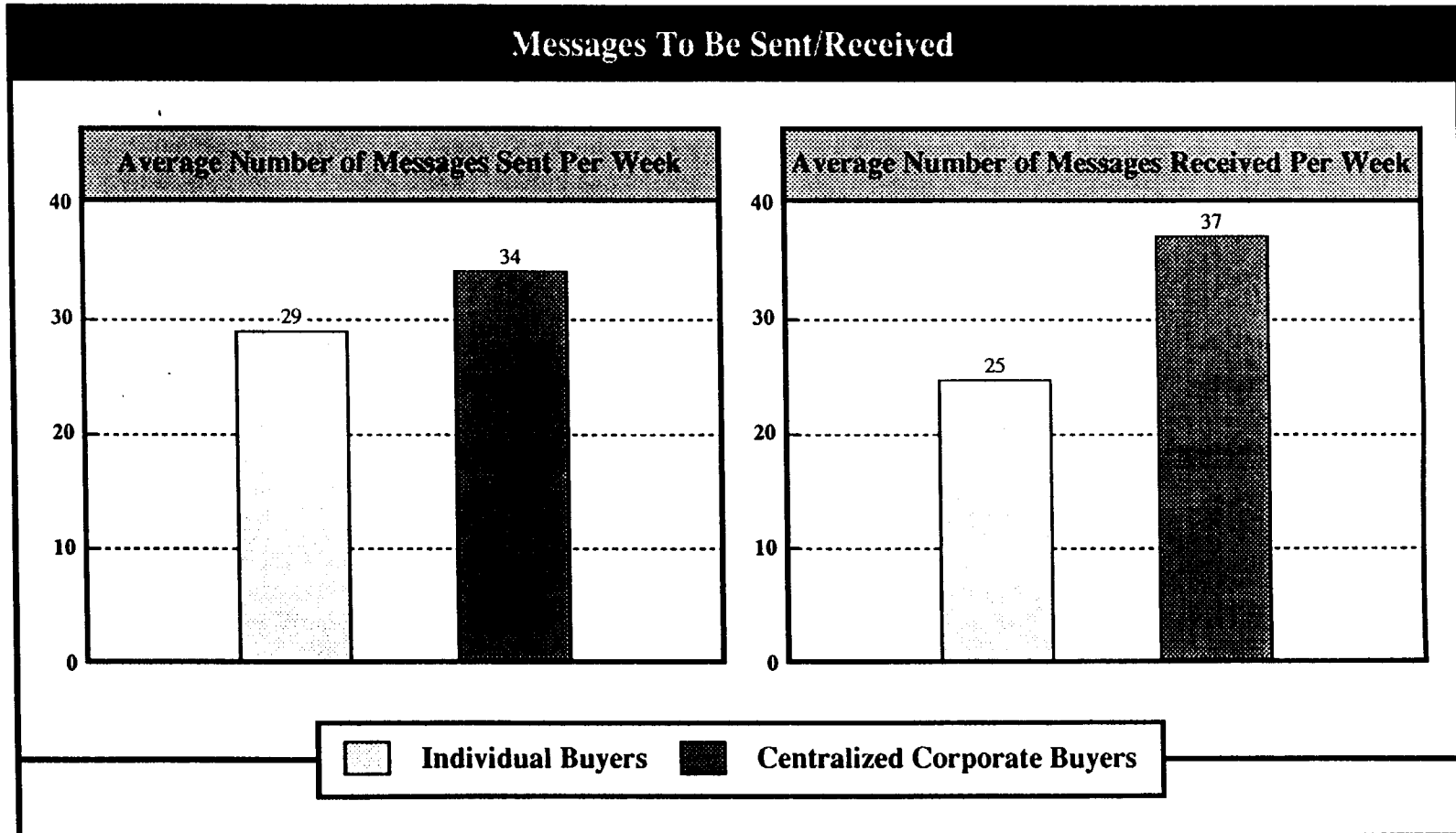
**The individual buyer market is considerably larger than is the market controlled by centralized corporate decisionmakers – this is consistent with adoption patterns observed in cellular and nationwide paging services**

**Survey data support the notion that early centralized corporate buyers of NWN have a high likelihood of needing to integrate the service with existing information systems**



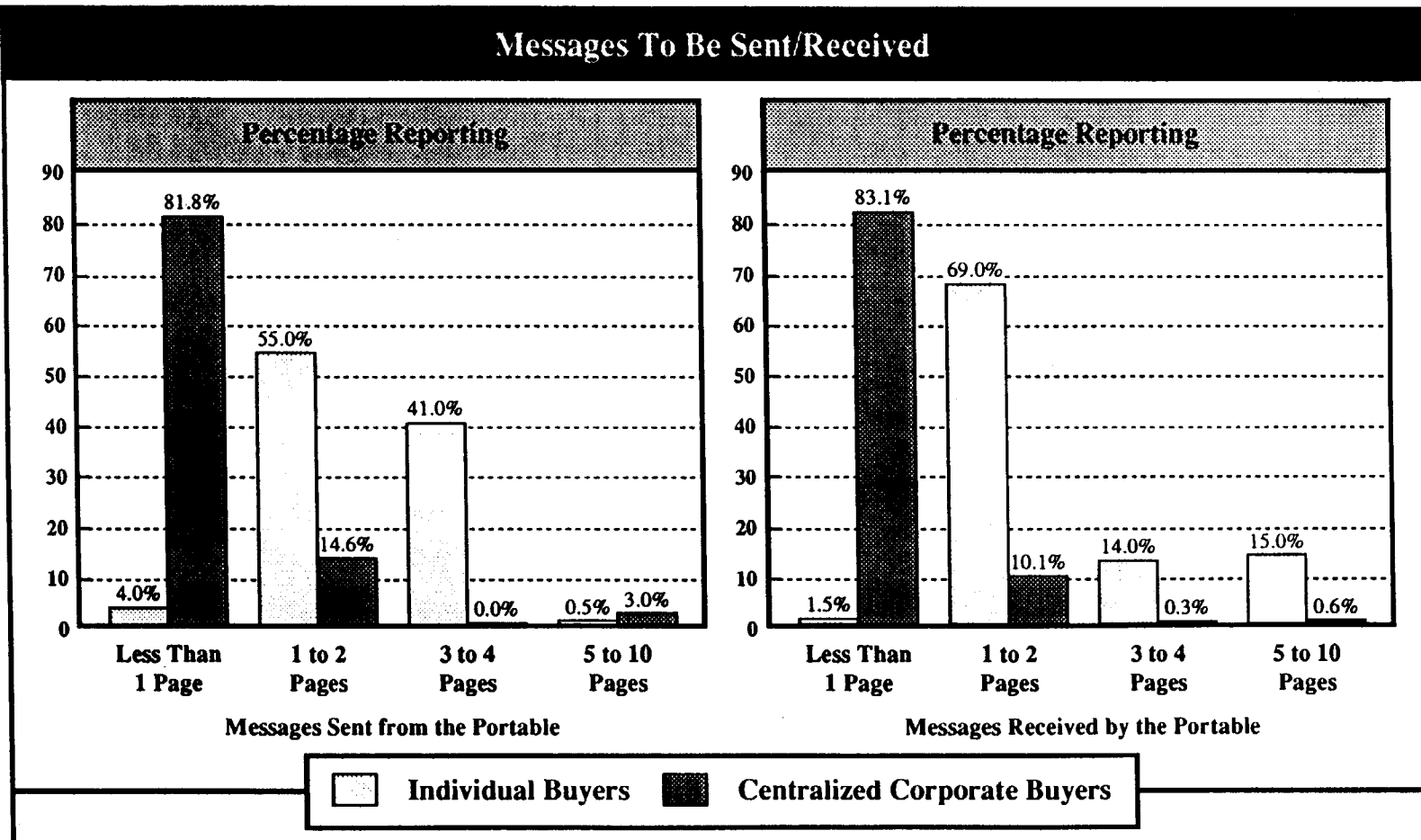
**This may explain why centralized corporate buyers tend to lag the adoption rate forecast for individual buyers**

**Expectation of number of messages is an average of over five messages to be sent from the portable and five messages to be received using the portable each work day**



**Centralized corporate buyers expect somewhat heavier traffic**

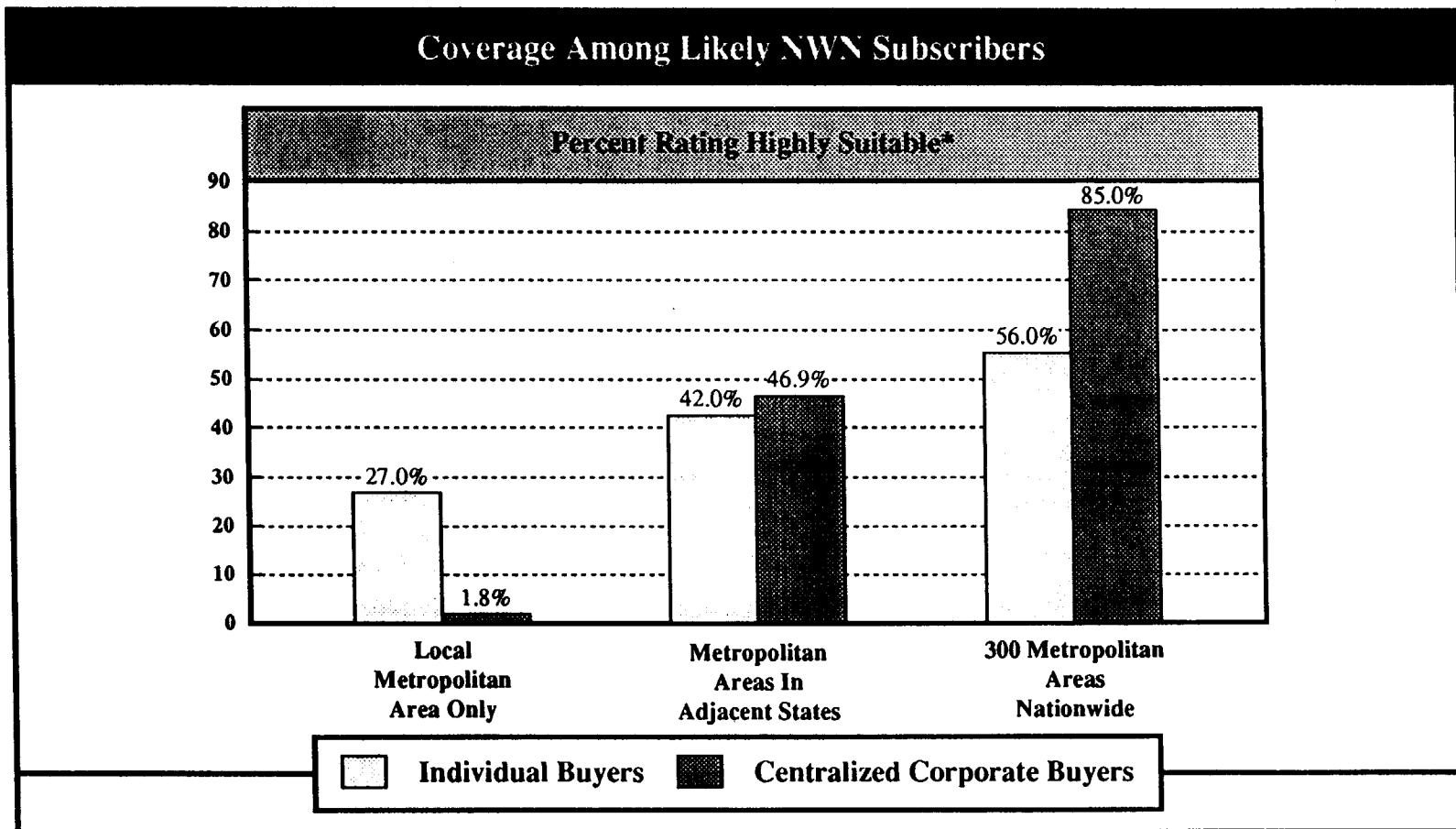
## Prospective users anticipate sending and receiving relatively short messages using the portables



Centralized corporate buyers anticipate that the bulk of their requirement is for particularly short messages under one page

## Preference for Nationwide Coverage Individual and Corporate Buyers

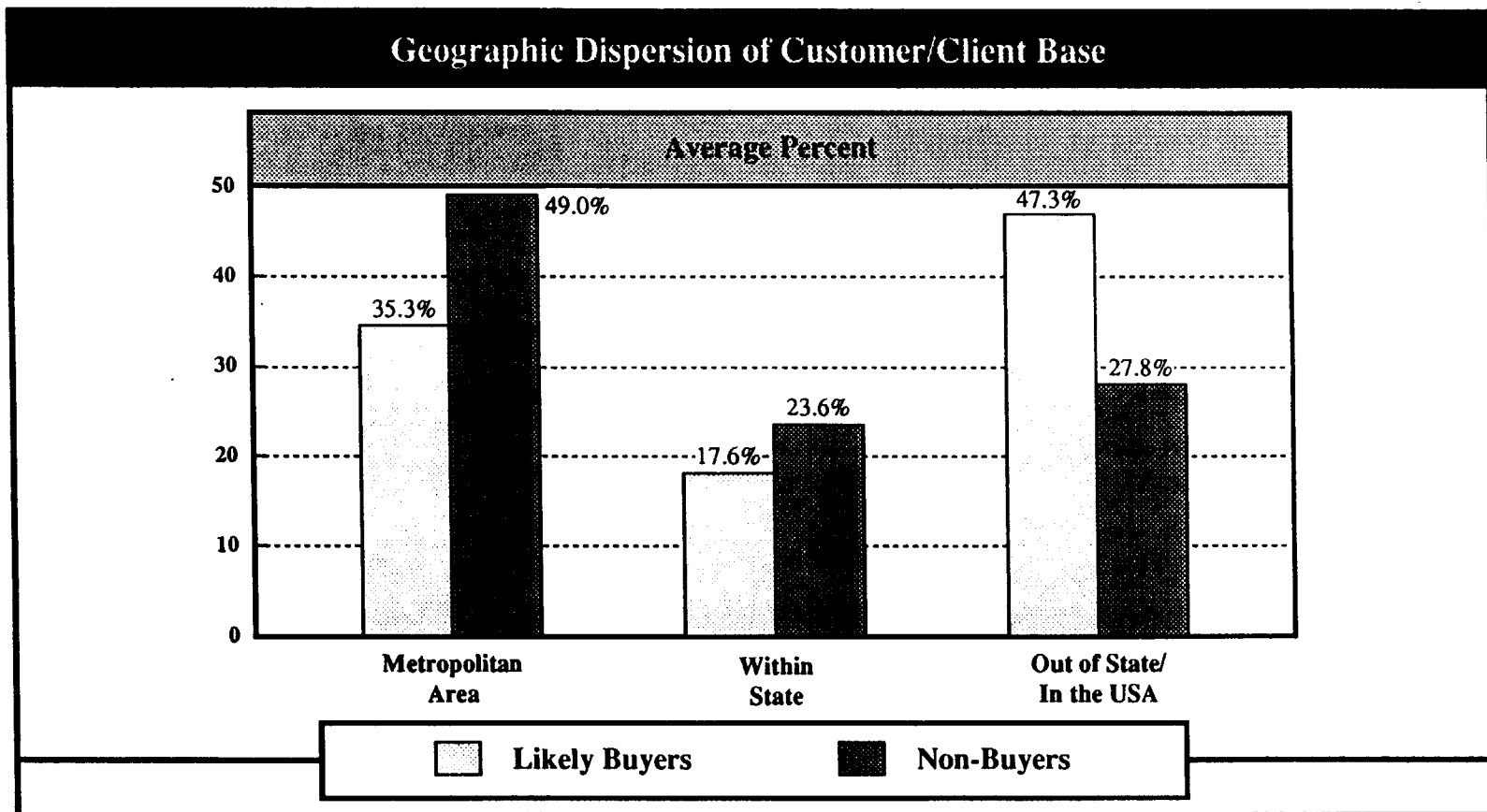
**Nationwide coverage is preferred at a statistically significant level among potential adopters of NWN**



\* Ratings of eight, nine or ten on a ten-point scale

## Preference for Nationwide Coverage Distribution of Customer Base

**Analysis of survey data indicates that likely buyers of NWN service tend to have broad geographic dispersion of customers relative to the customer distribution of non-buyers**





## **Relationship of NWN to Acknowledgement Messaging**

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**In order to examine the relationship of NWN to a less sophisticated two-way messaging service (acknowledgement messaging), data from two other Arthur D. Little surveys were used to supplement the corporate survey:**

- A survey of 1,000 households which focused on demand for acknowledgement messaging among individuals who did not currently use pagers
- A random survey of 600 current paging users

**In this analysis, it was assumed that NWN was designed to provide two-way messaging with messages of varying lengths**

**Acknowledgement messaging was assumed to be provided by the same platform as NWN and to involve brief acknowledgement messages notifying the sender of message receipt or a brief coded response**

**Estimates for the acknowledgement messaging market were also developed using the Bass curve methodology**

## **Relationship of NWN to Acknowledgement Messaging**

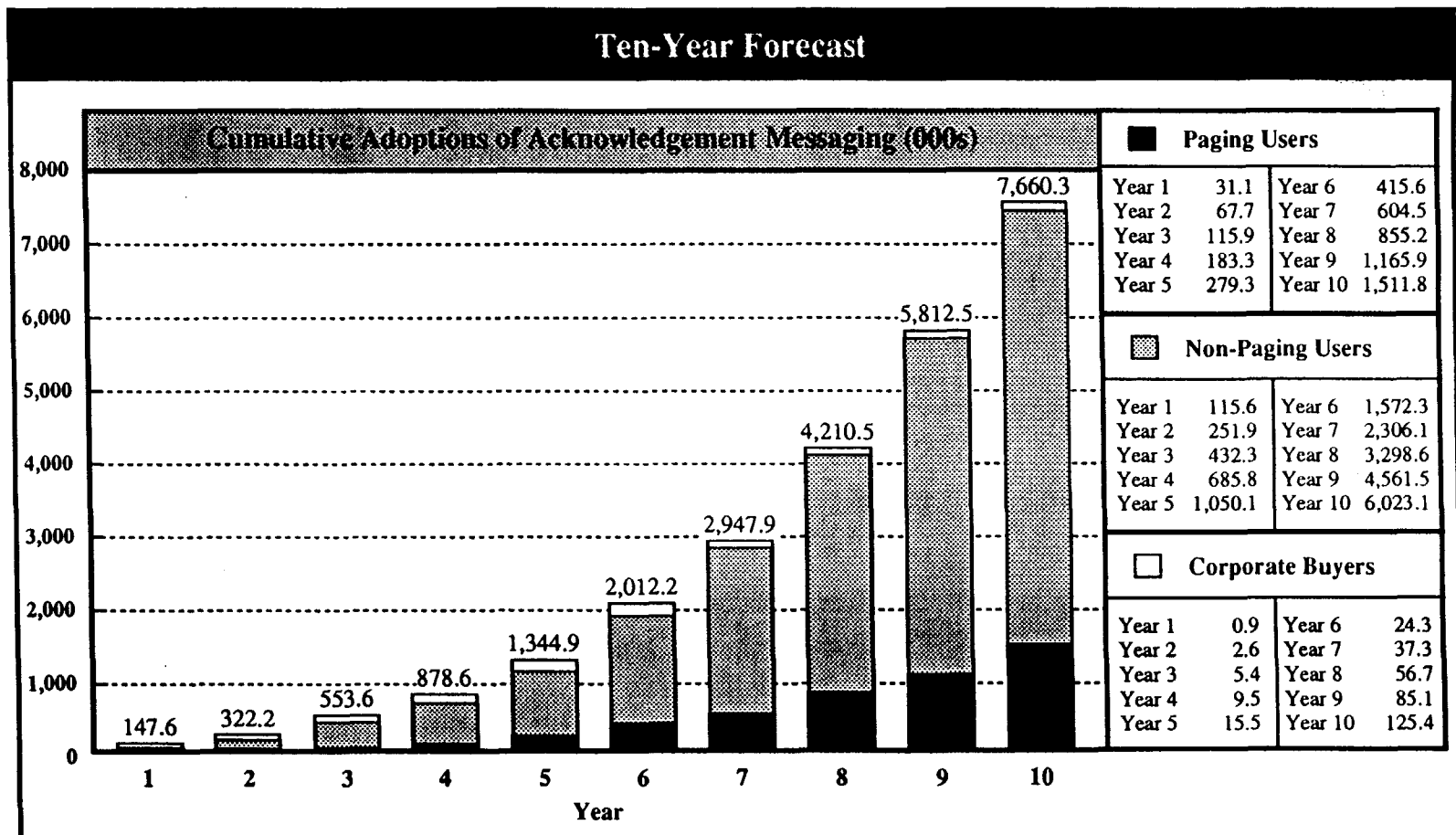
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### **Key assumptions in this analysis included the following:**

- No more than one acknowledgement messaging subscription per household
- The price of service ranged from \$40 per month to \$50 per month including messages, but excluding paging terminal costs
- Centralized corporate decisionmakers were assumed to acquire multiple units over a multi-year period

## Relationship of NWN to Acknowledgement Messaging Demand

Demand for acknowledgement messaging is also quite large, but falls below NWN demand in the “out” years (Years 9 and 10)



The individual market far exceeds the centralized corporate market for this offering

## **Implications**

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**A number of implications may be drawn from these findings:**

- 1. The markets for NWN and for acknowledgement messaging are quite sizeable in both the near-term (five years) and after ten years of service**
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